
M013a: FIXED ROPE

TSP Number/Title	M013a: Fixed Rope
Effective Date	Implement next class iteration upon receipt
Supersedes TSP(s)/Lessons	None
TSP User	The following courses use this TSP: Mountain Instructor Qualification Course (MIQC) Basic Military Mountaineering Course (BMC) Assault Climber Course (ACC)
Proponent	United States Army Alaska, Northern Warfare Training Center
Improvement Comments	Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: ATTN: TRAINING ADMINISTRATOR COMMANDANT USARAK NWTC 1060 GAFFNEY ROAD #9900 FORT WAINWRIGHT AK 99703-9900
Security Clearance/Access	Public domain
Foreign Disclosure Restrictions	The Lesson Developer in coordination with the USARAK NWTC foreign disclosure authority has reviewed this lesson. This lesson is releasable to foreign military students from all requesting foreign countries with Approval of Commandant USARAK NWTC.

PREFACE

Purpose

This training support package provides the instructor with a standardized lesson plan for presenting instruction for:

Task Number	Task Title
VIII.0801	Fixed Ropes

Technique of Delivery

Lesson Number	Instructional Strategy	Media
M013a	Class and Practical Exercise	None

This TSP contains

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SECTION I**ADMINISTRATIVE DATA****All courses including this lesson**

Course Number	Course Title(s)
NA	Mountain Instructor Qualification Course
NA	Basic Mountaineering Course
NA	Assault Climber Course

Task(s) Taught or Supported

Task Number	Task Title
VIII.0801.A	Install a fixed rope
VIII.0801.B	Ascend a fixed rope
VIII.0801.C	Ascend a fixed rope using a self-belay
VIII.0801.D	Recover a fixed rope

Task(s) Reinforced

Task Number	Task Title
VI.0200	Risk Management for Mountain Operations
VIII.0100	Mountain Travel and Walking Techniques
VIII.0300	Rope Management and Knots
VIII.0400	Anchors
VIII.0500	Climbing
VIII.0600	Belay Techniques
VIII.0700	Roped Climbing

Test Lesson Number

Hours	Lesson Number	Lesson Title
	M020	BMC Mountaineering Review

Prerequisite Lesson(s)

-M005, M006, M007, M008, M009, M010, M011, M012

References

Number	Title	Date	Additional Information
	NWTC Mountain Operations Manual	FY04	Updated yearly
FM 3-97.6	Mountain Operations	November 2000	http://www.adtdl.army.mil/
FM 3-97.61	Military Mountaineering	August 2002	http://www.adtdl.army.mil/

Student Study Assignment

Read TSP M013a

Instructor Requirements

MIQC graduate, TAITC graduate

Additional Support Personnel Requirements

None

**Equipment
Required****Instructor Equipment:**

- 1 x rope, static climbing rope, 11mm
- 1 x rope, demonstration, 10m
- 1 x webbing, nylon, 1" x 9.5 ft.
- 1 x webbing, nylon, 1" x 25 ft.
- 1 x carabiner, locking, "D" shaped aluminum
- 4 x carabiner, non-locking, oval steel
- 1 x rope, dynamic kernmantle, 7mm x 6 ft.
- 1 x rope, dynamic kernmantle, 7mm x 12 ft.
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Student Equipment:

- 1 x rope, static climbing rope, 11mm
- 1 x webbing, nylon, 1" x 9.5 ft.
- 1 x webbing, nylon, 1" x 25 ft.
- 1 x carabiner, locking, "D" shaped aluminum
- 4 x carabiner, non-locking, oval steel
- 1 x rope, dynamic kernmantle, 7mm x 6 ft.
- 1 x rope, dynamic kernmantle, 7mm x 12 ft.
- Pen and notepad

**Materials
Required****Instructor Materials:**

NWTC Mountain Operations Manual
Risk Management for Mountain Operations

Student Materials:

NWTC Mountain Operations Manual
Risk Management Guide for Mountain Operations

**Classroom,
Training Area
and Range
Requirements**

Mountaineering training/testing area large enough to facilitate 8 students working in pairs and SGL.
Training area must have adequate routes with natural anchors to facilitate simultaneous installation of 4 fixed ropes.

**Ammunition
Requirements**

None

**Instructional
Guidance**

Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

**Branch Safety
Manager
Approval**

NAME	Rank	Position	Date
Mark Gilbertson	GS-09	Training Specialist	

**Proponent
Lesson Plan
Approvals**

NAME	Rank	Position	Date
Peter Smith	GS-12	Training Administrator	

M013a: FIXED ROPE

SECTION II

INTRODUCTION

Method of instruction: Small Group
Type of instruction: Class
Instructor to student ratio: 1:8
Time of instruction: 1 ½ Hours
Media used: None

Motivator

The vast majority of routes selected for unit movements in mountainous terrain should require nothing more than good mountain walking techniques, and possibly some easy climbing. Even so, some of these non-technical routes may be very exposed, and a slip by an individual, if not immediately arrested, could result in a long, hard fall. There are also obstacles to movement, avoided under normal circumstances that may have to be negotiated due to the tactical situation or lack of safer alternatives. Fixing a route with some type of rope installation will increase the unit's margin of safety on exposed terrain and allow personnel to move themselves and their equipment over terrain features that would otherwise be impassable. Rope installations are normally fixed along the planned route by assault climbing teams prior to the arrival of the main body. One of the most useful rope installations for overcoming such obstacles is the fixed rope, also referred to as a fixed line. The fixed rope is a low load installation used to assist personnel over steep, exposed terrain.

Terminal Learning Objective

ACTION:	Demonstrate establishment, utilization and recovery of a fixed rope
CONDITION:	In a field environment given a single pitch of 4 th class terrain, with adequate loading and unloading platforms, a suitable natural anchor at the unloading platform, a climbing rope, and a climbing rack with adequate hardware and sling material
STANDARD:	Demonstrate establishment, utilization and recovery of a fixed rope IAW the NWTC Mountain Operations Manual.

Safety Requirements

- Ensure that students:
- Receive a risk assessment prior to movement mountaineering training area and before practical exercises.
 - Know that during the PE they must wear helmets and exercise caution whenever moving on steep slopes, or when within one body length of an edge.
 - Have all necessary equipment for the PE's, to include any additional equipment required by the NWTC SOP.
 - Have two full canteens and drink adequate water to avoid becoming dehydrated.
 - Receive a briefing on the symptoms of heat injury or cold weather injury, as appropriate.

Risk Assessment Level

Determined by instructor

Environmental Considerations

None

Evaluation

You will be evaluated on this task during the Mountain Stakes portion of training as per the NWTC training schedule for this course.

**Instructional
Lead-in**

You have already mastered the skills of rope management and knots, rigging natural anchors, tying in to the climbing rope, basic belays, and climbing. You will now use a combination of these skills to learn how to properly install, move on and recover a fixed rope.

SECTION III**PRESENTATION****ELO A**

ACTION:	Install a fixed rope
CONDITION:	In a field environment given a single pitch of 4 th class terrain, with adequate loading and unloading platforms, a suitable natural anchor at the unloading platform, a climbing rope, and a climbing rack with adequate hardware and sling material
STANDARD:	Install a fixed rope IAW the NWTC Mountain Operations Manual.

Learning Step Activity 1 - Fixed Rope Installation

a. Fixed ropes, also called fixed lines, are low-load installations used to assist personnel over steep, exposed terrain. There are basically two different ways to install a fixed rope depending upon on how the slope needs to be negotiated, the length of the fixed line required, and the direction that the rope will have to run along the route. The simple fixed rope is where the rope hangs straight down the route. A fixed rope with intermediate anchors is where the rope changes directions several times and multiple pieces of protection are required. Both methods of installation are performed by a 2 person climbing team. You will only be required to install a simple fixed rope.

b. To install a fixed rope:

1. Two experienced climbers prepare to climb. A suitable loading platform should be chosen for the bottom of the fixed rope. The leader must carry with him all equipment necessary to establish an anchor at the top of the pitch. Leader protection is usually not required on a typical slope, but additional hardware can be brought along and placed at the leader's discretion. In the event that the leader decides that protection placements are necessary, the second will set up a standard belay; otherwise, the second will simply stack and manage the rope, seeing that it runs smoothly up the slope and that it does not become tangled as the leader ascends.

2. The leader climbs the pitch, routing the rope as he goes. If the leader determines that the rope will lie across any sharp edges, he should either reroute the rope or pad the edge if he is unable to reroute the rope.

3. Upon reaching the top of the pitch, the leader will find a suitable unloading platform. It should be clear of hazards and preferably back from any cliff edges. The leader will establish an anchor for low load, alternating tension. A locking carabiner or two oval carabiners, gates opposite and opposed will accomplish this.

4. The leader will anchor himself if he is closer than one body length from the edge. The easiest way to do this is to use take a length of rope from the harness, tie a clove hitch and insert it into the carabiner on the anchor.

5. Take up any remaining slack. The second should manage the rope so that there is just enough rope remaining on the loading platform for soldiers to begin climbing.

6. Anchor the rope with a figure eight loop knot. If there is any danger of the leader taking a fall, he must remain clipped to the anchor. Otherwise, once the rope is anchored, he should untie from the rope and manage the excess rope in such a way that it will not interfere with personnel utilizing the installation.

7. Once the leader has accomplished this, he will give the command "CLIMB". This signifies that the installation is ready for use.

ELO B

ACTION:	Ascend a fixed rope
CONDITION:	In a field environment on a single pitch of 4 th class terrain, given a fixed rope that has been installed to standard
STANDARD:	Ascend a fixed rope IAW the NWTC Mountain Operations Manual.

Learning Step/Activity 1 - Ascending a Fixed Rope

a. Hand over hand technique: To ascend a fixed rope, the second, and all other personnel using the

installation, simply grasp the rope and use it for assistance as they ascend the slope. If protection was placed by the leader, the second will clean the pitch on his way up. Only one person moves on the rope at a time; a slip by one soldier could pull anyone else on the rope off their feet. When the pitch is completed, and the individual is off the rope, he will signal the next person to "CLIMB".

b. Camming technique: Grasp the rope with one hand, palm facing the ground. Rotate the hand up. With the other hand, grasp the rope above the first hand and rotate this hand up. Repeat this process as you move up the pitch. This camming motion of the hands will increase the stability of the grip on the rope.

ELO C

ACTION:	Ascend a fixed rope using a self-belay
CONDITION:	In a field environment on a single pitch of 4 th class terrain, given a fixed rope that has been installed to standard, an improvised seat harness, 1 x rope, dynamic kernmantle, 7mm x 6 ft., 1 x rope, dynamic kernmantle, 7mm x 12 ft., and 1 x carabineer, locking, "D" shaped aluminum.
STANDARD:	Ascend a fixed rope using a self-belay IAW the NWTC Mountain Operations Manual.

Learning Step/Activity 1 - Fixed Rope Self-Belay

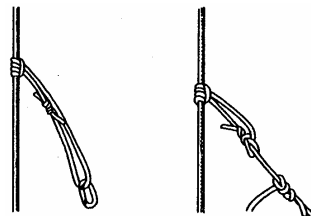
a. If the route followed by the fixed rope is exposed, or if the leader decided to place protection during his initial ascent, there is probably enough of a hazard to warrant some protective measure be taken by the second, and others, to prevent them from tumbling down the slope should they lose their grip on the rope. An individual can easily prevent a long, hard fall by attaching himself to the rope with a prusik. The prusik is moved along the fixed rope as the climber ascends. If the climber slips and loses control of the rope, the prusik will grab onto the rope and arrest the fall. A prusik used in this manner is referred to as a self-belay.

b. Method 1 of self belay:

1. If the climber is wearing a seat harness, he can simply take a 7mm x 6ft piece of dynamic kernmantle rope, and tie it into a continuous loop by joining the two ends with a double fisherman's knot. Once formed, the loop should be approximately three feet long when stretched out.
2. The loop is then wrapped around the fixed rope to form a prusik knot, and the portion of the loop opposite the prusik knot is attached to the seat harness with a locking carabiner. The double fisherman's knot should be positioned so that it does not interfere with the prusik knot or the carabiner.
3. When attached to the fixed rope, the prusik must be within arms reach of the climber, without regard to the climbers' position relative to the rope. This ensures that the climber can regain control of the prusik self belay if he takes a fall.

b. Method 2 of self belay:

1. If the climber is not wearing a seat harness, he can tie one end of 7mm x 12 ft kernmantle rope around his waist with a bowline.
2. The other end is then tied to the fixed rope with a prusik knot secured by a bowline. Again, the self-belay should hold the fixed rope within arms reach of the climber.



Self-Belay on a Fixed Rope
Method 1 **Method 2**

ELO D

ACTION:	Recover a fixed rope
CONDITION:	In a field environment on a single pitch of 4 th class terrain, given a fixed rope that has been installed to standard, an improvised seat harness, 1 x carabiner, locking, "D" shaped aluminum.
STANDARD:	Recover a fixed rope IAW the NWTC Mountain Operations Manual.

Learning Step/Activity 1 – Recover a Fixed Rope

If the fixed rope is not to be left in place for follow-on units, the best method of recovery is to have the last climber tie-in to the rope and ascend while being belayed from above. The climber can easily free the rope if it becomes caught on anything as it is taken up by the belayer. The soldier acting as belayer should tie into the end of the rope before detaching the rope from the anchor. The belayer may use the same anchor for the belay that was used to anchor the fixed rope.

SECTION IV**SUMMARY**

Check on Learning

- a. Why must the prusik be within arms reach of the climber as he ascends the rope?
Should the climber fall, he must be able to reach the prusik to regain control of the self belay and begin climbing again.
- b. What kind of load/tension is placed upon the anchor of a fixed rope installation?
Low load, alternating tension.
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Review and Summarize Lesson

ACTION:	Demonstrate establishment, utilization and recovery of a fixed rope
CONDITION:	In a field environment given a single pitch of 4 th class terrain, with adequate loading and unloading platforms, a suitable natural anchor at the unloading platform, a climbing rope, and a climbing rack with adequate hardware and sling material
STANDARD:	Demonstrate establishment, utilization and recovery of a fixed rope IAW the NWTC Mountain Operations Manual.

Transition to next lesson

As per the NWTC training schedule; dependent upon the course in conduct.

SECTION V	STUDENT EVALUATION
Testing Requirements	Students will be tested on this task during the Mountain Stakes portion of training as per the NWTC training schedule for this course.
Feedback Requirement	Students will receive two opportunities to pass each event tested. Re-training will be conducted for students that fail the first iteration of testing. Refer to M020 for specifics.